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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/081,498	02/22/2002	Vladimir Anatolyevich Aksyuk	28-59-1	1508

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Ryan, Mason & Lewis, LLP
Suite 205
1300 Post Road
Fairfield, CT 06430

EXAMINER

CONNELLY CUSHWA, MICHELLE R

ART UNIT

PAPER NUMBER

2874

DATE MAILED: 10/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/081,498

Applicant(s)

AKSYUK ET AL.

Examiner

Michelle R. Connelly-Cushwa

Art Unit

2874

Period for Reply
-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-9 and 11-21 is/are rejected.
- 7) ☒ Claim(s) 10 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 May 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 0202.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Information Disclosure Statement

The prior art documents submitted by applicant in the Information Disclosure Statement filed on February 22, 2002 have all been considered and made of record (note the attached copy of form PTO-1449).

Drawings

Seven (7) sheets of formal drawings were filed on May 20, 2002 and have been accepted by the Examiner.

Specification

Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

Claim 12 is objected to because of the following informalities: "said optical signal" in line 2 of claim 12 should be changed to --an optical signal--. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-9 and 11-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Yu et al. (US 2003/0058520 A1).

Regarding claims 1 and 7; Figures 1 and 3 of Yu et al. disclose a method of and an optical device for adjusting a phase of an optical signal, the device comprising comprising:

- at least one waveguide (34, see paragraph [0047]) for carrying/receiving an optical signal (32); and
- at least one mirror (20a, 20b, 20c... in Figure 1 and 42 in Figure 3) having an adjustable position to vary a path length of the optical signal (see paragraph [0041] and paragraph [0098]).

Regarding claims 2 and 8; the mirrors (20a, 20b, 20c...) are controlled by micromachine control elements (electrostatic vertical dual-mode comb drives, see paragraph [0045]) that position the mirrors in a desired position along the optical path (see Figure 1).

Regarding claims 3 and 9; the mirrors are positioned at the ends of at least one waveguide (see fiber 34 in Figure 1 and fibers 1-7 in Figure 3).

Regarding claim 4; the mirrors are fabricated from waveguide materials including polysilicon, crystalline silicon, silicon nitride, and silicon dioxide, which are deposited on a substrate (22, see paragraph [0040] and paragraph [0045]).

Regarding claims 5 and 11; the optical signal (32) is a wavelength-division multiplexed (WDM) signal comprising N wavelength channels (discrete wavelengths) and the optical device further comprises a demultiplexer for producing a plurality of

demultiplexed output signals (λ_1 - λ_7) from the input WDM signal (32) and the at least one mirror (20a, 20b, 20c in Figure 1 or 42 in Figure 3) associated with each of the N wavelength channels.

Regarding claim 6; a plurality of the waveguides (1-7) carry the wavelength channels (λ_1 - λ_7).

Regarding claims 12 and 19; Figure 22 of Yu et al. discloses a method and optical device for switching an optical signal, the device comprising:

- means (34) for receiving an optical signal (32);
- means (26) for splitting the optical signal into at least two optical components;
- a movable mirror (20, 20b, 20c...) for adjusting a phase of at least one of the optical components by adjusting a position of the mirror along a path of the optical component; and
- means (28) for recombining the at least two optical components.

Regarding claim 13; the means for receiving comprises at least one waveguide (fiber, 34) for carrying the optical signal (32).

Regarding claim 14; the means for splitting (26) and recombining (28) the optical signals is a coupler region between two adjacent waveguides (fibers 34 and 56).

Regarding claims 15 and 20; the mirror (20a, 20b, 20c...) is controlled by a micromachine control element (electrostatic vertical dual-mode comb drives, see paragraph [0045]) that positions the mirror in a desired position along an optical path.

Regarding claim 16; the mirror (20a, 20b, 20c...) is positioned at an end of at least one waveguide (34, 56).

Regarding claim 17; the mirror is fabricated from waveguide materials including polysilicon, crystalline silicon, silicon nitride and silicon dioxide deposited on a substrate (22, see paragraph [0045]).

Regarding claims 18 and 21; the optical signal (32) is a WDM signal comprising N wavelength channels and the optical switch further comprises a demultiplexer for producing a plurality of demultiplexed output signals from the input WDM signal (32) and at least on mirror (20a, 20b, 20c...) associated with each of the N wavelength channels (as shown in Figure 1), wherein the plurality of demultiplexed output signals are recombined by the lens (28) and focused on a single waveguide (56).

Allowable Subject Matter

Claim 10 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art cited on attached form PTO-892 is the most relevant prior art known. However, claim 10 is allowable over the prior art of record because none of the references either alone or in combination disclose or render obvious a method according to claim 10, wherein the mirror is fabricated from a waveguide. While, Yu et al. teaches that the mirrors are fabricated from waveguide materials, Yu et al. does not teach that the mirrors are fabricated from a waveguide.

Hence, there is no reason or motivation for one of ordinary skill in the art to use the prior art of record to make the invention of claim 10.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Fujita (US 6,304,709 B1) discloses an optical device comprising a mirror (31) that is movable to adjust an optical path length between the ends of two adjacent waveguides (11 and 12), wherein the mirror (31) is positioned at the ends of the two waveguides (11 and 12).

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Any inquiry concerning the merits of this communication should be directed to Examiner Michelle R. Connelly-Cushwa at telephone number (703) 305-5327. The examiner can normally be reached 9:00 AM to 7:00 PM, Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney B. Bovernick can be reached on 703-308-4819. The fax phone

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number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general or clerical nature should be directed to the Technology Center 2800 receptionist at telephone number (703) 308-0956.

Michelle R. Connelly-Cushwa

Michelle R. Connelly-Cushwa

Patent Examiner

September 22, 2003